

CLAIMS

WE CLAIM

1. A drive assembly for a sootblower of the type having a carriage and a lance tube affixed to said carriage having one or more nozzles for directing a jet of fluid cleaning medium against surfaces to be cleaned, comprising:

a drive motor providing a rotary shaft output;

a lance rotational drive train having two or more non-circular gears in meshing engagement having a drive train input coupled to said drive motor rotary shaft output and having a drive train output wherein said non-circular gears provide a variable drive ratio such that the relationship between the angular speed of said drive train input to the angular speed of said drive train output varies with the rotational position of said non-circular gears; and

a lance tube drive coupling said drive train output to said lance tube for causing rotation of said lance tube whereby said lance tube is driven for rotation at a non-constant speed.

2. A drive assembly according to Claim 1 wherein said drive motor provides a substantially constant rotational speed output of said rotary output.

4. A drive assembly according to Claim 1 wherein said non-circular gears have a generally ellipsoid shape.

6. A drive assembly according to Claim 1 wherein said non-circular gears mesh to provide two points each of a maximum drive ratio and a minimum drive ratio per revolution each one of said gears.

8. A drive assembly according to Claim 1 wherein said lance rotational drive is coupled to said lance by a drive chain.

9. A drive assembly according to Claim 1 wherein said sootblower is a retracting type further having a frame assembly and said carriage moving along said frame assembly to extend and retract said lance tube.

10. A drive assembly for a sootblower of the type having a frame assembly, a carriage movable along said frame assembly, a lance tube affixed to said carriage having one or more nozzles for directing a jet of fluid cleaning medium against surfaces to be cleaned, comprising:

a drive motor providing a rotary shaft output;

a lance rotational drive train having two or more non-circular gears in meshing engagement having a drive train input coupled to said drive motor rotary shaft output and having a drive train output wherein said non-circular gears provide a variable drive ratio such that the relationship between the angular speed of said drive train input to the angular speed of said drive train output varies with the rotational position of said non-circular gears; and

a lance tube drive coupling said drive train output to said lance tube for causing rotation of said lance tube at a non-constant rotational speed, said lance rotational drive train being phased with respect to said surfaces to be cleaned such that the rate of rotational motion of said lance tube is at a maximum value where the length of said jet measured between said nozzle and said surface to be cleaned is at its minimum and the rate of rotation is lower than said maximum value where the length of said jet is greater than said minimum value.

11. A drive assembly according to Claim 10 wherein said drive motor provides a substantially constant rotational speed output of said rotary output.

12. A drive assembly according to Claim 10 wherein said non-circular gears have a generally ellipsoid shape.

13. A drive assembly according to Claim 10 wherein said non-circular gears each have a variation in their pitch diameter of about 5 to 1.

14. A drive assembly according to Claim 10 wherein said non-circular gears mesh to provide two points each of a maximum drive ratio and a minimum drive ratio per revolution each one of said gears.

15. A drive assembly according to Claim 14 wherein said lance has a pair of nozzles oriented to discharge said fluid cleaning medium at an angle of about 90 degrees from the longitudinal axis of said lance and wherein said nozzles are diametrically opposed to discharge in opposite directions.

16. A drive assembly according to Claim 10 wherein said lance rotational drive is coupled to said lance by a drive chain.